Sept. 18, 1956 C. H. K. NAPIER 2,763,071

BOOTS, SHOES AND LIKE ARTICLES OF FOOTWEAR

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Fig. 1

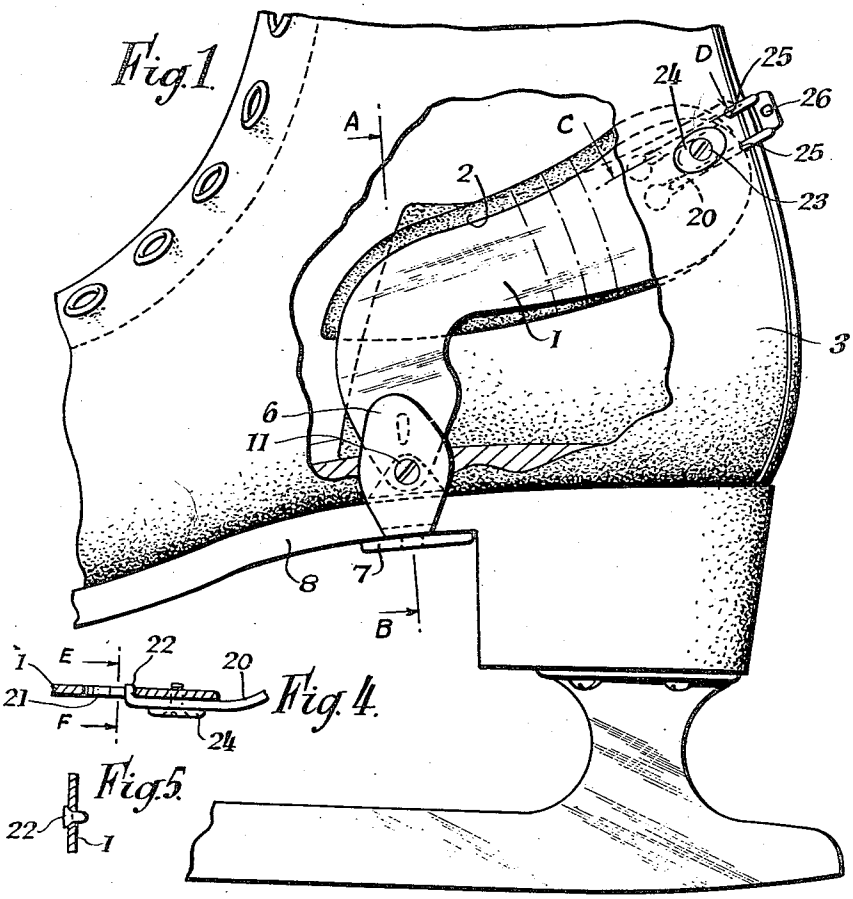
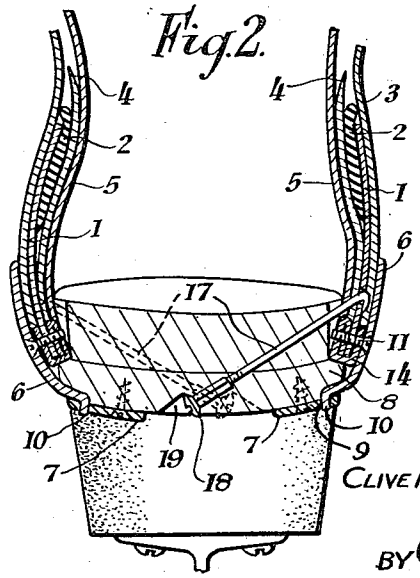


Fig. 4

Fig. 5

Fig. 2



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BOOTS, SHOES AND LIKE ARTICLES OF FOOTWEAR

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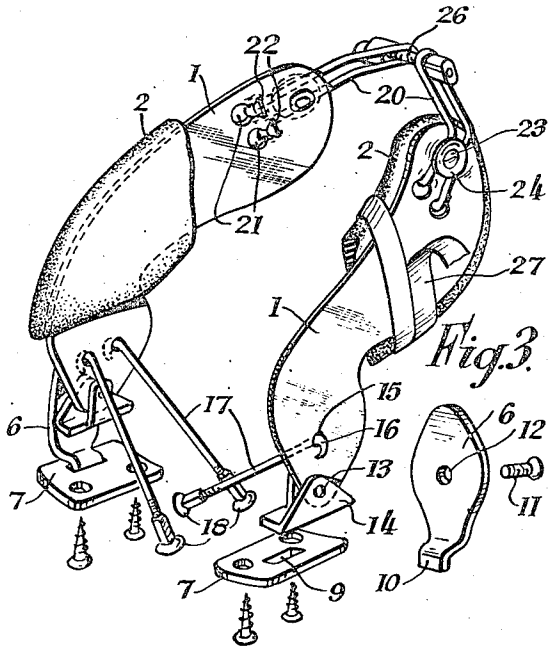

Fig. 3.

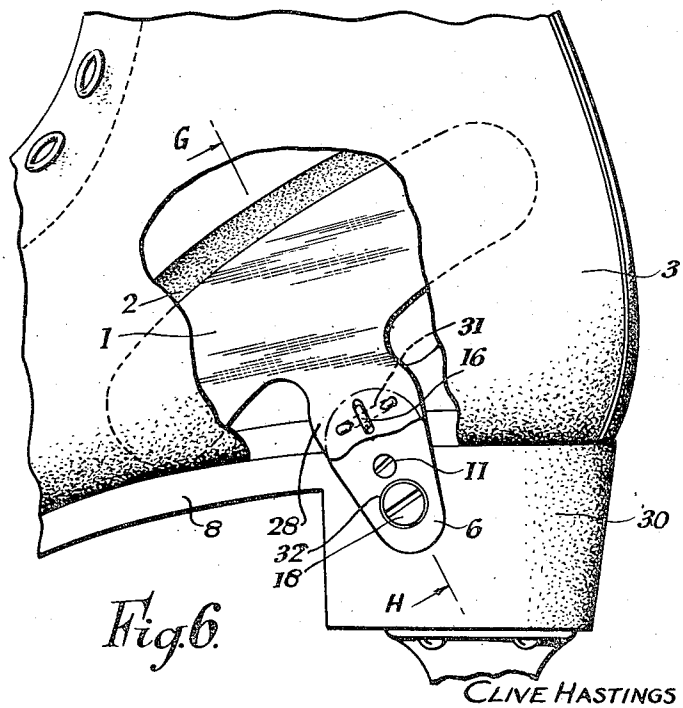

Fig. 6.

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BOOTS, SHOES AND LIKE ARTICLES OF FOOTWEAR

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Fig. 7.

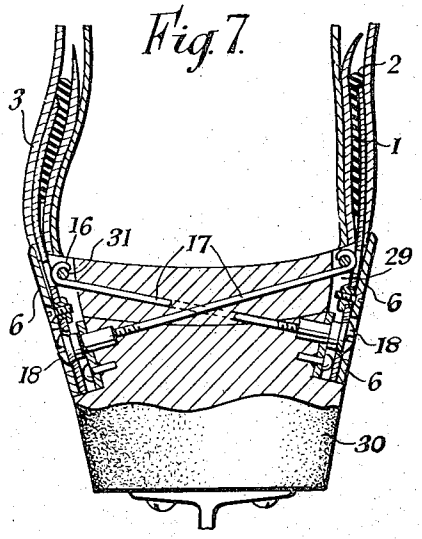


Fig. 8.

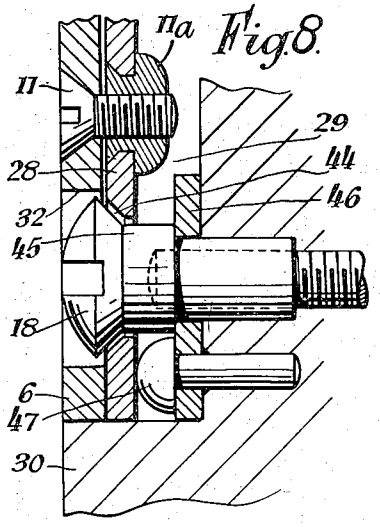


Fig. 9.

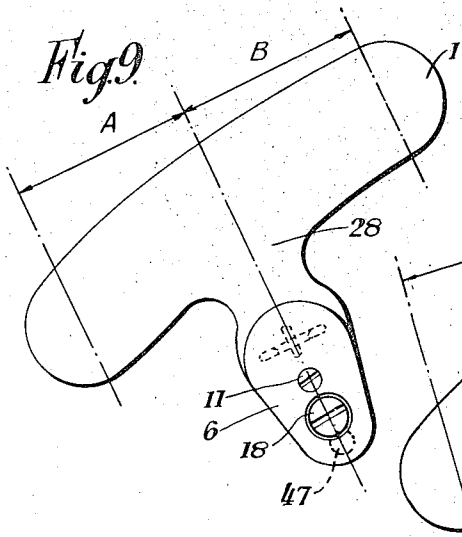
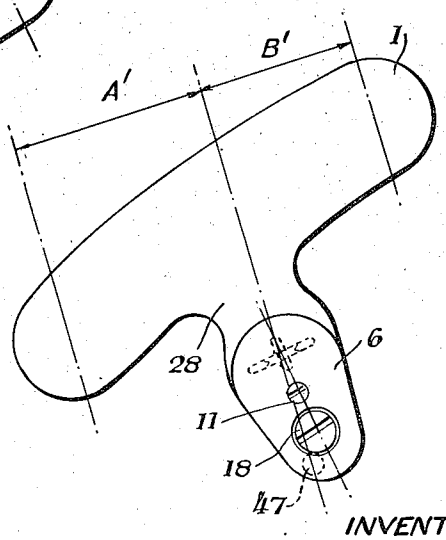


Fig. 10.



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BOOTS, SHOES AND LIKE ARTICLES OF FOOTWEAR

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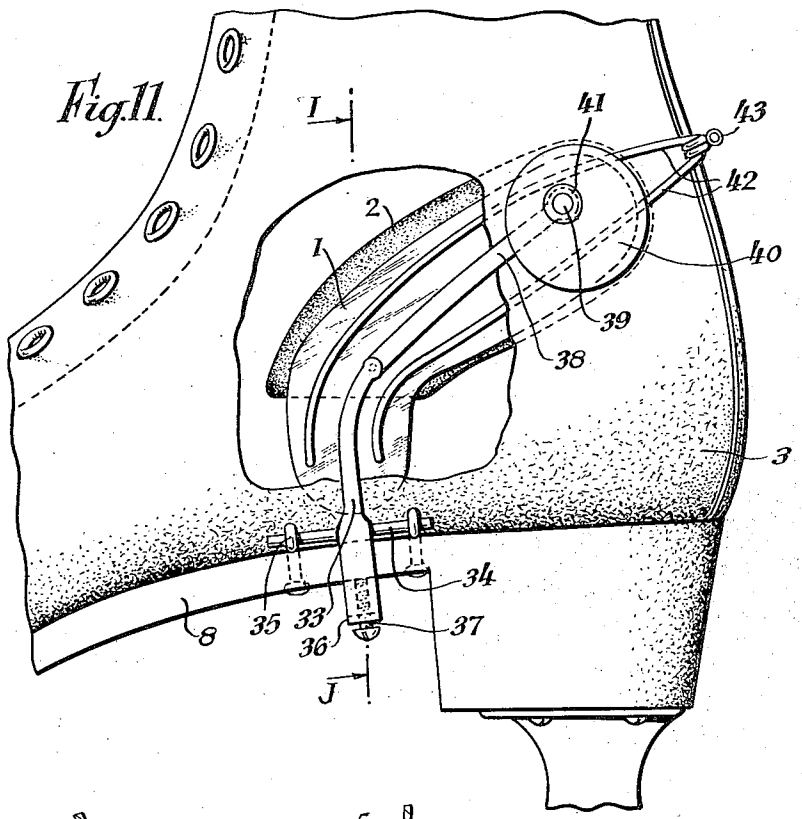
Fig.11.



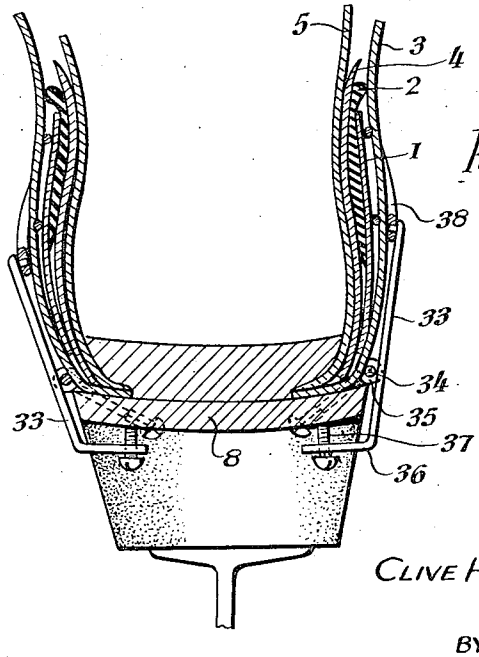


Fig.12.

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United States Patent Office

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BOOTS, SHOES AND LIKE ARTICLES OF FOOTWEAR

Clive Hastings Kingsley Napier, Putney, England

Application September 18, 1953, Serial No. 381,034

Claims priority, application Great Britain September 25, 1952

7 Claims. (Cl. 36—8.5)

The present invention relates to shoes particularly sports shoes, for example, skating boots.

Ice skating boots must fit closely around the heel immediately below the ankle. It has been proposed to incorporate, in the upper, pad-like supports situated on opposite sides of the foot immediately beneath the ankle for the purpose of ensuring a close fit of the boot at that point and providing efficient support. Such boots are expensive to manufacture as they have to be specially made and fitted. The supporting pads if made of steel are comparatively rigid and so likely to fit either too tightly or too loosely. If of leather or synthetic material having similar properties they are often affected by the combination of heat, perspiration and pressure.

The invention comprises two pad-like supports for application to or incorporated into the shoe article of footwear. These pads are intended to lie on opposite sides of the foot and provide supports in the vicinity of the ankle. Means is provided for drawing said pads into firm indirect engagement with the foot to provide efficient support.

The supports should not project from the surface of the boot to an extent which might cause the wearer to trip when skating or should be as unobtrusive as possible, if in the form of an external fitting.

Preferably, therefore, the pads should be actually incorporated into the boot to lie within the upper with the adjusting external so as to be accessible for adjustment. In that way adjustments can be easily made when the boot is being worn. The boot need differ only slightly in appearance from a boot of normal construction. The support can easily be incorporated into a boot during manufacture or may easily be applied to an existing boot.

In order that the invention may be clearly understood and readily carried out the invention is hereinafter described with reference to the accompanying drawings in which:

Figure 1 is a side elevation of a skating boot fitted with one form of support in accordance with the invention, the boot being broken away to illustrate the support in greater detail;

Figure 2 is a section on the line A—B in Figure 1;

Figure 3 is a perspective view of the support removed;

Figure 4 is a section on the line C—D in Figure 1;

Figure 5 is a section on the line E—F in Figure 4;

Figure 6 is a similar view to Figure 1 but illustrating an alternative construction;

Figure 7 is a section on the line G—H in Figure 6;

Figure 8 is an enlarged section of the construction shown in Figures 6 and 7;

Figures 9 and 10 illustrate diagrammatically the operation of one of the blades in the construction shown in Figures 6 to 8;

Figure 11 illustrates a further alternative construction;

Figure 12 is a section on the line I—J in Figure 11.

In the construction illustrated by Figures 1 to 5 of the accompanying drawings the suport is shown built into an ice skating boot. The support includes two metal blade-

like members **1** carrying rubber or like pads **2** at their inner faces. The parts **1** and **2** are introduced between the upper **3** and a leather or other stiffener **4** lying adjacent the lining **5**.

As will be seen clearly from Figure 1 the blades and their associated pads **2** are shaped so that they lie below the ankle and extend rearwardly into a position in which they lie partially around the heel. The blades **1** at their forward ends projecting downwardly to a point where they are connected with two plates **6** which are so mounted as to permit of the blades and their associated pads being moved angularly towards one another to grip the foot indirectly and give the necessary heel support.

In the arrangement shown two plates **7** are screwed to the under surface of the boot shank **8**. The plates are slotted at **9** to receive cranked projections **10** on the plates **6**. The arrangement is such that the plates **6** are permitted a limited amount of angular movement in a vertical plane.

The blades **1** are drilled at their lower ends to receive securing screws **11** which pass through holes **12** in the plates **6** and through holes **13** in metal brackets **14** which accommodate the blades at their lower ends. The holes in the brackets **14** are tapped to receive the threaded parts of the securing screws **11**. The securing screws **11**, therefore, not only hold the plates **6** in position on the outside of the upper, but also connect the plates **6** in a rigid manner with the blades and their associated brackets **14**. The maner of connection is clearly shown in Figures 2 and 3.

The blades **1** and their associated pads **2** can thus be drawn inwardly towards each other and angularly about the slots **9** in the plates **7**. The method of angular adjustment is shown clearly in Figure 2. Each blade is formed with a hole **15** to accommodate the hooked end **16** of a tie rod **17**. Each tie rod **17** passes through the boot lining and thence through the downwardly inclined holes bored through the shank. The extremities of the tie rod **17** are screw-threaded to receive adjusting nuts **18** which lie in countersunk recesses **19** in the under surface of the shank so as to be accessible to a screw-driver or other suitable tool.

The left boot is illustrated in Figures 1 to 5 and as will be seen clearly from Figure 3 the inner blade **1** has associated with it two tie rods whilst the outer blade **1** is associated with a single tie rod, the single tie rod passing between the pair of tie rods associated with the opposite blade. It is possible, therefore, with this arrangement to bring greater pressure to bear on the inner blade than the outer so that the foot can be more adequately supported on the inside than on the outside.

It will be appreciated that the tie rods **17** move the forward parts of the two blades bodily inwards when the adjusting nuts are tightened and although this adjustment may be adequate it is preferred to provide a further adjustment at the back of the heel. In the construction shown each blade carries an extension piece **20** which may take the form of an elongated wire loop, the extremities of the loop being bent inwardly at right angles and flattened slightly to a substantially dove-tail shape. The blade is formed with two holes **21** of substantially key-hole formation, the walls of the narrow part of each hole being under-cut to accommodate the dove-tail parts **22** so that they will maintain their position therein. The extensions **20** are held in postion on the blade by means of securing screws **23** passing through a clamping washer **24**, the clamping washer and screw **23** lying on the exterior of the upper.

The greater part of the extensions **20** lie within the upper, but they project therefrom at the points **25** indicated in Figure 1. The loop extremities are connected

together by a threaded tie bolt **26** carrying at one end an adjusting nut which when tightened draws the parts **20** together and the blades and their associated pads into indirect gripping engagement with the heel.

The greater part of the support will be hidden from view as it is accommodated between the upper and the lining. Only the plates **6** and the heel adjustment member **26** and clamping washers **24** project from the upper and in no way detract from the otherwise smooth flush appearance of the boot. If necessary the leather or other internal support **4** may be cut away to permit of a freer inward movement of the parts. The pads may be secured to the blades in any suitable way as, for example, by means of adhesive tape **27** diagrammatically illustrated in Figure 3. With the construction described above the support may alternatively be incorporated into the boot during manufacture or may be introduced at a later date. This can be done merely by cutting the stitches at the mouth of the boot connecting together the upper and lining and introducing the blades and their associated pads downwardly into their operative position. The upper is cut a minimum amount. The cuts are hidden from view by the plates **6**. The plates **6** in addition serve to clamp the cut parts of the upper and prevent any possibility of the upper splitting when the boot is worn.

Figures 6 to 10 illustrate a modified construction which is somewhat simpler than that previously described, but which does not incorporate the additional adjustment at the back of the heel. It is intended that the blades **1** shall initially be bent so that they in themselves fit snugly on opposite sides of the foot. The blades are moved bodily inwardly with the simple form of adjustment employed.

The blades in this construction are of substantially T shape, although they may be of a shape more closely simulating a Y. The normally horizontal limb of the T is downwardly and forwardly inclined so that it fits snugly beneath the ankle bone. The third limb **28** of the T projects downwardly and is located in a recess **29** formed in the outer surface of the heel **30**.

It is intended that the blades shall be pivoted inwardly about their lowermost edges and so the recesses **29** are of the wedge or tapering cross-sectional shape shown in Figure 7. The blades **1** and their associated pads **2** are drawn bodily inwards towards each other by means of two tie rods **17** which are arranged in a somewhat similar inclined manner to those shown in the previously described arrangement. The tie rods in this case, however, pass through the heel as distinct from the shank.

One end of each tie rod is bent over into the form of a hook **16** which in this case passes around a U-shaped lug **31** carried by the blade. The opposite end of the tie rod passes through a hole drilled in the opposite blade and being screw-threaded to receive an adjusting nut **18**. Tightening of the adjusting nuts **18** will draw the two blades and their associated pads bodily towards one another into good indirect gripping engagement with the foot to provide the required support. Each adjusting nut **18** takes the form of a shouldered nipple. The tapering head of this nipple has a clearance **44** in a countersunk hole in the blade (see particularly Figure 8), thereby to a certain extent retaining the blade in position without restricting its freedom to swing. The shoulder **45** on the adjusting nut engages a washer **46** through which the shank of the nut passes. The washer becomes a reaction point for the blade in the form, for example, of a rivet **47** which is soldered in position in the washer. The shank of the rivet is located in a hole bored in the heel.

Referring to Figures 9 and 10 it will be seen that if the rivet is located centrally as in Figure 9 the effective lengths of arms A and B will be equal. But if the rivet is located other than centrally, as in Figure 10, arms A' and B' will be unequal thus providing a degree of unbalanced pressure on the foot if required. It will be seen also that the washer serves to spread the reaction load from the rivet head over a reasonable area of leather.

As the upper must necessarily be cut to allow the downwardly depending limbs of the blades to project, the cut is covered by means of plates **6** which are generally similar to the plates **6** described in connection with the previous arrangement. The plates **6** are held in position by means of screws **11** which enter threaded holes formed in bosses **11***a* carried by the blades. The blades **6** are provided with additional holes **32**, for the passage of the adjusting nuts **18** thus exposing the nuts for adjustment purposes.

In the further modified construction shown in Figures 11 to 12 the adjusting mechansm is more apparent as it is mainly disposed on the exterior of the boot. The blades in this case are moved bodily inwardly by two adjustments, i. e., an adjustment lying beneath the shank and by a heel adjustment on the back of heel.

In this construction the adjustment takes the form of two levers **33** arranged on opposite sides of the boot and on opposite sides of the shank. The levers each carry a fulcrum pin **34** mounted for angular movement in a pair of eye members **35** which are driven through the shank. The lower ends of the levers are bent inwardly substantially at right angles as at **36** and are drilled and tapped to receive adjusting screws **37** which bear on the under surface of the shank.

The levers **33** carry at their upper ends an upwardly inclined extension **38** which is connected with its associated blade at the point **39**. The parts are connected by means of a securing screw, a clamping washer **40** and a securing nut **41**. The clamping washer and its associated securing nut lie on the extremity of the upper.

The clamping washer **40** also serves to clamp an elongated wire loop **42** in position. The loop **42** lies on the outer surface of its associated blade and provides an additional stiffener. The rearward extremity of this loop **42** projects through the holes to the exterior of the upper and extends into a position at the rear of the heel where the parts **42** can be drawn together with the assistance of a suitable form of heel adjustment. Such adjustment may be similar to that described in connection with Figures 1 to 5. The adjustment in any case preferably includes an adjusting nut **43**. When tightened this nut serves to bring the parts **42** and their associated blades nearer together to produce the required gripping effect on the heel.

It will be appreciated that the construction disclosed by Figures 11 and 12, although not being so neat as the two constructions previously described has the merit of simplicity. It can be easily applied to an existing boot with a minimum of alteration. The blades are adjustable individually by individual tightening up of the adjusting screws **37** beneath the shank.

It is preferred to construct the blades from steel the pads being composed of a comparatively soft material such as, for example, sponge rubber.

Although shown as applied to a skating boot the pad-like supports may be used with any other type of footwear where heel support is important.

What I claim:

1. An adjustable heel support for a shoe, comprising two supports for mounting in the shoe to lie on opposite sides of the foot in the vicinity of the ankle, each of said supports having a body including a base part anchored to a part of the shoe and a supporting part extending upwardly from the base part adjacent to the upper into ankle engaging position, and individual adjusting means operable from the exterior of the shoe for drawing each support into gripping engagement with the foot to adjust the support to the foot while the shoe is on the foot.

2. An adjustable heel support as claimed in claim 1, wherein the supports each extend forwardly and downwardly towards the shank and rearwardly toward the heel,

there being two external adjusting devices associated with the supports at their front ends for drawing the supports individually into gripping engagement with the foot at their forward ends and an external common adjustment at the heel for drawing both supports into gripping engagement with the heel at their rearward ends.

3. An adjustable heel support as claimed in claim 1, wherein the supports are of substantially T shape and are each movable bodily into gripping engagement with the foot by external individual adjusting means located adjacent the shank and heel of the shoe.

4. A shoe equipped with ankle-supporting means, comprising a pair of supports one at each side of the shoe having a body including a base part anchored to the heel of the shoe and a supporting part extending upwardly from the base part adjacent to the upper into ankle engaging position, the body being held relatively fixedly at the base part but capable of inward movement at the supporting part, screw adjusting means for each support engaging the supporting part and extending diagonally through the heel to the opposite side thereof to an adjusting element exposed on the heel of the shoe whereby the supporting part may be adjusted inwardly or outwardly relatively to the ankle from outside the shoe while the shoe is being worn.

5. A shoe equipped with ankle supporting means, comprising, a support at the side of the shoe having a body including a base part anchored to the sole of the shoe and a supporting part extending upwardly from the base part adjacent to the upper into ankle engaging position, the body being held relatively fixedly at the base part but capable of inward movement at the supporting part, screw adjusting means for said support engaging the body

above the supporting part and extending diagonally to the heel of the shoe to the opposite side thereof to an adjusting element exposed on the heel of the shoe whereby the supporting part may be adjusted inwardly or outwardly relative to the ankle from outside the shoe while the shoe is being worn.

6. A shoe according to claim 1, in which each support body is a plate on which the base part is anchored to the heel of the shoe, and the adjusting means includes a shaft extending through the heel of the shoe to engage said plate above its point of anchoring, the opposite end of said shaft projecting from the heel being provided with a threaded end and a nut on said end and means on the heel for engaging said nut whereby adjustment of the nut moves the shaft relative to the nut and so moves the plate toward or away from the ankle.

7. A shoe according to claim 1, in which the body of each of said supports is a plate of which the base part is anchored to the heel of the shoe and said adjusting means includes a pair of shafts each of which extends diagonally through the heel of the shoe from one plate to the other, one end of each shaft being connected to the plate above the point of anchoring, the other end of each shaft projecting from the heel and being threaded to receive an adjusting nut, the adjusting nut projecting through an opening in the adjacent portion of the supporting member at that side of the shoe, adjustment of the adjusting nut moving its plate inwards or outwards.

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